

**ABSTRACT OF THE DISCLOSURE**

A controlled nitrogen diffusion process is employed on a steel coil spring of a suspension system. One known process is that known as the Nitreg® process. Ammonia is introduced into a furnace atmosphere and nitrogen diffuses into the coil spring, creating a hardened diffusion zone which resists fatigue and fractures. The Nitreg® nitrogen diffusion process is a computer controlled menu driven process which continually monitors the process parameters. By regulating the nitriding potential, the monitored process parameters are automatically adjusted to achieve optimal results. The nitriding potential is the tendency of nitrogen to be absorbed by steel and is expressed as the ratio of the partial pressure of ammonia to the partial pressure of hydrogen. Additionally, the depth of the white compound layer can be regulated or eliminated, reducing distortions.